

BENIGN LESIONS OF THE ALIMENTARY TRACT

SIMULATING MALIGNANT DISEASE.



I N D E X.

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INTRODUCTION.

Malignant disease of the alimentary tract is common, and its early diagnosis of the greatest importance. Nevertheless, non-malignant lesions do occur, and not uncommonly in those areas where malignant disease is most prevalent. There is no doubt that at times, benign lesions of the alimentary tract may simulate malignant disease very closely.

Thus, various chronic inflammatory and granulomatous lesions, such as Hypertrophic Tuberculosis of the caecum, Amoebiasis, and certain cases of Crohn's disease, commonly produce tumour formation in the ileo-caecal region. When this is associated with chronic ill-health, anaemia, wasting, and intestinal obstruction, it is obvious how readily these benign lesions may be confused with malignant disease.

Unless very critical diagnostic criteria are employed and the closest consideration is given to the clinical history, mistakes in diagnosis are liable to be made. Careful evaluation of these factors is extremely important in certain cases of chronic diverticulitis. Such cases may simulate carcinoma of the colon very closely. This is especially liable to occur when chronic inflammation in and around diverticula has produced an indurated mass in the left iliac fossa associated with stenosis of the bowel and chronic intestinal obstruction.

In the rectum, benign "tumours" may be confused with malignant disease. Amoebiasis may present as

either a tumour formation or indurated ulcer.

Schistosomiasis is a condition which may give rise to bleeding granulomatous masses in the rectum which are sometimes mistaken for malignant disease. In all such cases a fully detailed history is essential.

Many of the complications of benign neoplasms of the alimentary tract are similar to those of malignant disease. Thus, benign neoplasms of the stomach are subject to ulceration and haemorrhage, with the production of anaemia and loss of weight. They may cause pyloric obstruction and a filling defect, demonstrated by X-Ray examination with a barium meal. Here again, a careful history, complete physical examination and very critical evaluation of the results of investigations will help in avoiding mistakes in diagnosis, while Gastrosocopy will, in the hands of the expert, assist very considerably.

The findings of the present survey are in support of those authorities who believe that the vast majority of chronic gastric ulcers remain benign lesions throughout their course. Never the less, the clinical symptomatology of chronic gastric ulcer may at times closely simulate that of malignant disease. It is obvious therefore that the correct diagnosis of non-malignant lesions of

the alimentary tract is most important from the point of view of prognosis and treatment.

In this survey thirty-two cases with benign lesions of the alimentary tract, in which malignant disease was suspected or incorrectly diagnosed, are described. The pathology of the lesions is considered, together with their clinical manifestations, and, in particular, the symptoms and signs which led to suspicion or incorrect diagnosis of malignant disease. The investigation of the cases is discussed and the steps whereby the true diagnosis was arrived at without doubt.

The sites in the alimentary tract most prone to exhibit non-malignant lesions, and the sites in which non-malignant lesions, are most likely to simulate malignant disease, are assessed.

Lesions of the mouth and pharynx are not included in this investigation.

In support of this survey, and to emphasize the importance of non-malignant lesions of the alimentary tract in hospital and general practice, an estimate is made of the incidence of non-malignant lesions of the alimentary tract in:-

- (a) All patients admitted to a general hospital of 200 beds.
- (b) All cases of dyspepsia admitted to hospital.
- (c) The population as a whole.

These observations and investigations on dyspepsia and benign lesions of the alimentary tract simulating malignant disease, were made during the writers appointment as medical registrar at Southend General Hospital during the year 1946.

The following clinical cases, in which there was suspicion or incorrect diagnosis of malignant disease are studied in detail.

<u>TYPE OF CASE</u>	<u>NUMBER.</u>
Chronic Gastric Ulcer	13
Leiomyoma of Stomach	1
Chronic Appendicitis	1
Crohn's Disease	1
Diverticulitis	8
Benign tumours of Colon.	2
Benign tumours of Rectum	5
Rectal Strictures.	1

PATHOLOGY SECTION.

CRITERIA OF MALIGNANCY

Experience has shown that as long as a neoplasm remains local, does not cause symptoms or impair the general health, does not invade locally or disseminate itself to distant parts, and does not cause death, it may be considered to be benign. On the other hand, if it grows rapidly, causes symptoms, impairs health, invades or destroys, gives rise to secondary growths elsewhere and causes death, it may be said to be malignant. If the above features are present they may be sufficiently reliable for the recognition of malignancy.

However, Graham (1) in a discussion on the criteria of malignancy, points out that the clinical manifestations of a new growth are really those of complications and sequelae. Many of these are equally applicable to benign neoplasms and cannot therefore be considered as characteristic of malignancy. Thus, pain, haemorrhage, thrombosis, infection, ulceration, anaemia, loss of weight and intestinal obstruction, may all occur in both simple and malignant neoplasms. It is true that malignant neoplasms have a greater tendency to complications. But it must be remembered that it is these symptoms which first bring the patient under review and are clinically so important from the point of view of

early diagnosis and treatment of malignant disease. It is evident therefore that, clinically, suspicion of malignancy is bound to occur in certain cases of benign neoplasms, and that in many cases the criteria of malignancy must depend on study of the neoplasm itself.

Any derangement of the normal architectural plan of a tissue will at once raise the question of malignancy. Abnormalities of cellular detail, especially when associated with architectural derangements usually indicate malignancy. Such abnormalities include variations in the size and shape of cells, departures from the adult and approach to the embryonic type, abnormalities of nuclear chromatin and nucleoli, and of mitotic and amitotic division. Mitotic figures do not necessarily indicate malignancy and their absence does not exclude malignancy. In general, the greater the abnormality of cellular detail, the more malignant the tumour. These histological and cytological abnormalities constitute the principal basis for histological grading which, in the hands of experts, will reflect the degree of malignancy at the time of examination with reasonable accuracy.

CHRONIC GASTRIC ULCER.

The microscopic picture of chronic gastric ulcer is well recognised, with its zones of exudation, necrosis, granulation tissue and fibrosis. But widely diverse views are held on the subject of malignant change in gastric ulcers. Over thirty years ago Wilson and MacCarty (2) of the Mayo Clinic, put forward the view that in 60 - 70% of cancer cases there was a previous ulcer. Their criteria of malignancy was cytoplasia, or the finding of elongated and deformed cells in the base of the ulcer. To some pathologists, the finding of isolated epithelial cells and atypical tubules in the neighbourhood of an ulcer means cancer, while to others, they represent the result of distortion produced by fibrosis and granulation tissue formation. Thus Ewing (3) found that only 5% of gastric ulcers showed cancer. Dible, (4) in a survey of 126 ulcers with no clinical suspicion of malignancy found no microscopic evidence of cancer. In cases where cancer was suspected clinically 4% of ulcers showed cancer. In a recent survey of the subject Held and Busch (5) state that 2 - 3% of gastric ulcers may become malignant. But they point out that this group consists of two sub groups. One in which the ulcer proceeds the development of the cancer, and the second in which the ulcer has been malignant from the beginning. The clinical history in the two groups being quite different.

Boyd believes that not more than 5% of cancers develop from ulcer, and that the proportion of ulcers which become malignant is probably very much smaller.

In view of the diverse interpretation of the histopathology Held and Busch (5) suggest that in assessing early malignant change in chronic gastric ulcers, most stress should be laid on the clinical symptoms. Namely, a gradual change from hunger pains to persistent boring epigastric pain radiating to the back, loss of weight, anorexia, anaemia, and hypochlorhydria.

Gastroscoopically, malignant change may be suspected from the size of the ulcer, enlargement or failure to heal after medical treatment, heaping up and rounding of ulcer margin, or by absence of puckering and other signs of fibrosis, and by disturbance of gastric motility.

In the past the size of an ulcer has been used as a criterion of its malignancy. Thus MacCarty (2) has stated that an ulcer with a diameter greater than 2 cms. is likely to be malignant. In the present series of cases 5 ulcers had a diameter of over 2.5 cms. as demonstrated by gastroscopy and operation. All proved to be benign on microscopic examination. Held and Busch (5) found many benign ulcers with a diameter of 6 - 10 cms. and some malignant ulcers with a diameter of less than 2 cms. The mere size

of an ulcer is therefore of little value in determining its malignancy.

Rarely, a chronic ulcer may perforate into the peritoneal cavity, more often into the pancreas to which it becomes attached by inflammatory adhesions sometimes with the formation of an indurated mass. This was seen in case A where at operation a large ulcer was found firmly attached to the pancreas and the whole supra colic compartment was filled with a mass of dense adhesions. Clinically, the presence of an indurated mass in the epigastrium increased the suspicion of malignancy.

In the present series of 13 cases of chronic gastric ulcer early malignant change was suspected from the clinical symptoms, or the results of investigations, or both. The innocence or malignancy of the ulcers was in doubt at operation, although in case A malignant change was strongly suspected. In all cases microscopic examination of the ulcer revealed a benign lesion and in most cases associated lymphatic glands showed chronic inflammatory changes.

Plate 1 is a microphotograph of the chronic gastric ulcer from Case A.

The Pathologists report is as follows:-

"Chronic gastric ulcer, with necrotic surface and much fibrous replacement in the submucosa and muscle coats. There is no evidence of malignant change."



PLATE 1. (X 8)

BENIGN LESIONS OF THE ILEO-CAECAL REGION.Regional Ileitis.

(6)

In 1932 Crohn and his associates described this disease as a sub-acute or chronic inflammatory process affecting the terminal ileum, and characterised by ulceration of the mucosa and marked fibrosis causing narrowing of the lumen. To this condition they gave the name terminal ileitis, but it is now known that the lesion may affect other zones of the alimentary tract, notably the colon.

The wall of the bowel becomes thickened and extremely rigid, so that clinically a mass can be felt, usually in the right iliac fossa. The serous surface is reddened. The submucosa shows inflammatory changes and is infiltrated with polymorphs, lymphocytes and plasma cells. Thickening of the wall of the gut may be so extreme that the lumen is almost obliterated. Necrosis and destruction of the mucosa occur later. The regional mesenteric lymph nodes are often enlarged, presumably due to the same low grade infection that involves the bowel wall. Ulceration causes diarrhoea and colicky abdominal pain, sometimes with blood and mucus in the stools. Ulceration is followed by fibrosis with stenosis and obstruction. Finally, fistula formation may develop.

Although, in theory, diarrhoea, fever, extreme chronicity and a tendency to occur in young individuals should differentiate this condition from carcinoma, nevertheless suspicion of malignancy may arise in cases where the disease is limited to a short segment of the gut, or where there is a palpable abdominal mass and sub-acute intestinal obstruction, associated with anaemia and loss of weight.

In case E there was emaciation, gross anaemia, a palpable mass in the right iliac fossa and sub-acute intestinal obstruction. Malignant disease was strongly suspected on clinical grounds. Operation revealed a mild inflammatory condition of the bowel with oedema, thickening and rigidity of the bowel wall, narrowing of the lumen and ulceration of the mucosa, most marked in the caecum and proximal part of the ascending colon.

Microscopic examination confirmed the diagnosis of Crohn's disease. Inflammatory changes were also present in associated lymph nodes.

Plate 2 is a microphotograph of a section of the proximal part of the ascending colon from Case E. The Pathologists report is as follows:-

"Portion of colon showing chronic inflammatory changes and thickening of the wall by granulation tissue. The appearance is consistent with that of Crohn's Disease".



PLATE 2. (X 13)

Chronic Appendicitis.

Occasionally periappendicitis may produce a chronic inflammatory mass in the right iliac fossa, with adhesions involving the bowel and causing intestinal obstruction. Usually the inflammatory nature of the lesion will be apparent clinically. But in case D, a man aged 72 years, there were few inflammatory signs, the prominent clinical features being a palpable mass in the right iliac fossa with sub-acute intestinal obstruction. Malignant disease was suspected on clinical grounds. Operation revealed the inflammatory nature of the mass. Dense adhesions had formed round a small chronic appendicular abscess and involved the ileo caecal junction.

Amoebiasis of the caecum.

Repeated amoebic invasion of the caecum and colon together with superadded pyogenic infection may produce a progressive inflammatory lesion, leading to tumour formation (amoeboma). The inflammatory process spreads through the bowel wall and infiltrates surrounding structures. The tumour consists of fibrous tissue, overgrowth of granulation tissue, with varying degrees of ulceration. The wall of the gut is destroyed and small abscesses may be present in the centre of the mass. There is considerable round celled infiltration. Lymphocytes and eosinophils being present in large numbers. Typical amoebic ulcers may or may not be present. Microscopy

may reveal the cysts of *Entamoeba Histolytica*. In a review of this condition in troops in the Far East, during the War, Naunton Morgan (7) points out that the symptomatology of amoeboma in the colon and caecum; the presence of a palpable tumour, the chronicity, ill health, wasting and a filling defect demonstrated by barium enema and X-Ray examination, makes diagnosis from carcinoma difficult. In the early stages Emetine therapy may clear the mass away but in the later stages where there is much fibrosis, operation and microscopic examination may be necessary to exclude carcinoma.

Hypertrophic Tuberculosis.

In Hypertrophic Tuberculosis of the ileo caecal region there is great formation of tuberculous granulation tissue, chiefly in the submucous coat, causing narrowing of the lumen of the gut. Ulceration of the mucous membrane may occur. The affected part of the bowel becomes thickened and stiff and may form a tumour-like mass which is mistaken for carcinoma. Although the more diffuse nature of the thickening, the younger age of the patient, and perhaps signs of tuberculosis elsewhere, should indicate the benign nature of the lesion, microscopic examination may, in some cases, be necessary to establish the correct diagnosis.

Actinomycosis of the ileo-caecal region.

This condition causes great thickening of the bowel wall with ulceration of the mucosa. Suppuration occurs with sinus and fistula formation. The fungus may be found in the pus but clinical diagnosis from malignant disease, even at operation is often extremely difficult.

Simple Penetrating ulcer of the caecum.

Rosser (8) in a discussion on simple non-specific penetrating ulcer of the caecum points out that the chronic form is another benign lesion of the ileo-caecal region which may be confused clinically with malignant disease. The incidence is greatest in males of middle age and the symptoms are very varied.

When the perforation is slow and associated with much fibrosis, there may be extensive tumour formation in the ileo-caecal region.

Clinically, in this chronic stage, constipation is the common symptom, with vague abdominal pain, low grade fever, and slight tenderness of the mass in the right iliac fossa.

The presence of pain and fever and the absence of anaemia should help to distinguish the disease from carcinoma of the caecum. Often the correct diagnosis is only made at operation.

BENIGN LESIONS OF THE DISTAL COLON AND RECTUM.Diverticulitis.

In certain cases of chronic diverticulitis, the leakage of toxins or bacteria through the mucosa of diverticula causes chronic extra-mucosal inflammation with the formation of a large mass and sometimes the production of stenosis of the bowel. The resected mass consists of fat and dense fibrous tissue. Microscopically, it is composed of granulation tissue and connective tissue with numerous areas of inflammation. Giant cells may be present. When the lumen of the bowel is opened the mucosa is found to be intact and the openings of diverticula may be seen as small pits with oedematous margins. On the other hand in carcinoma of the colon, the mucosa is frequently involved and ulcerated.

In case F a lesion similar to that described above was present. The prominent clinical features were sub-acute intestinal obstruction and the presence of a persistent mass in the left iliac fossa. Although X-Ray examination with barium enema showed the presence of diverticula the possibility of associated malignant disease of the colon was suspected. Even at operation the nature of the mass was uncertain. Microscopic examination revealed the results of chronic inflammation around diverticula.

Plate 3 is a microphotograph of a section from the resected mass in case F.

The pathologists report is as follows:-

"Chronic pyogenic diverticulitis.

There is no evidence of malignant disease."

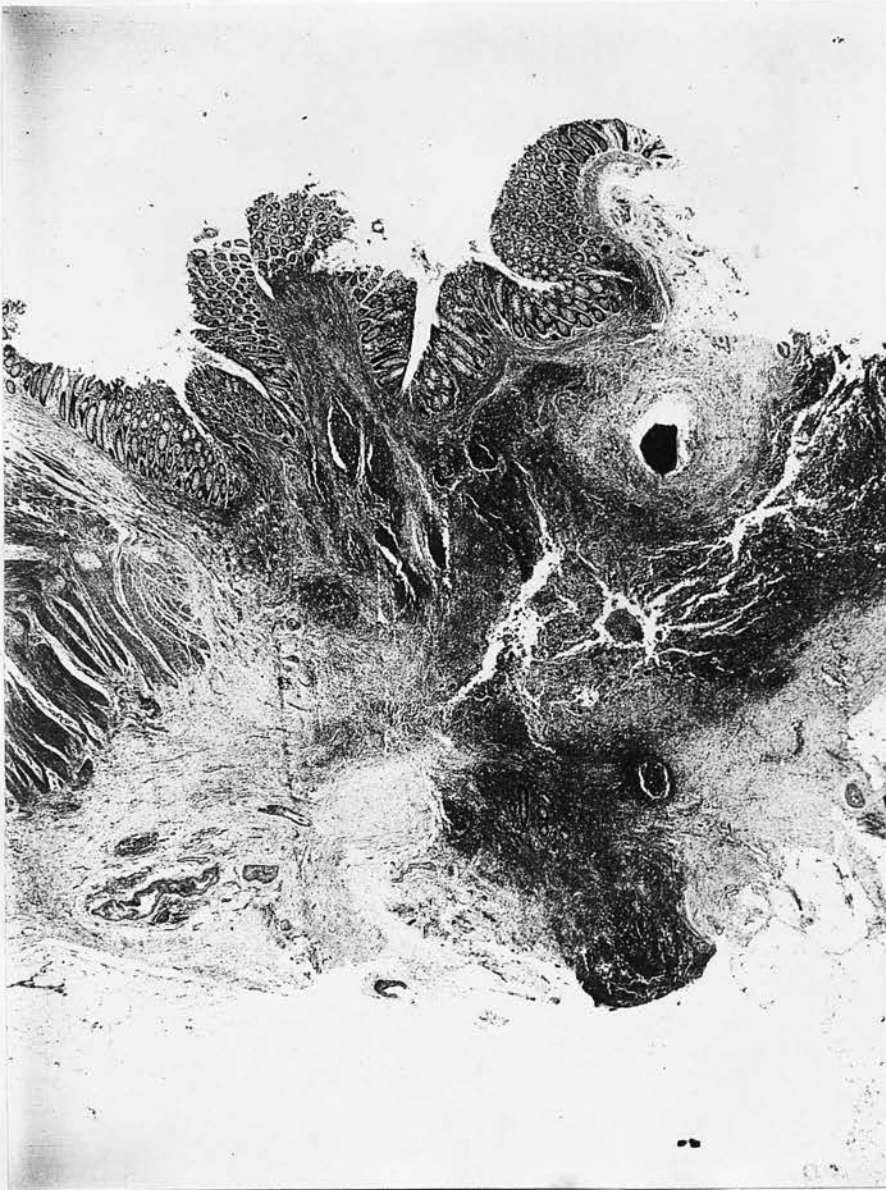


PLATE 3 (X 18)

In case G, the inflammatory process was less chronic and symptoms subsided with conservative treatment. X-Ray examination with barium enema, the response to medical treatment, and the symptom free after history, indicating the benign nature of the lesion.

Amoebiasis in the distal colon or rectum may present as tumour or indurated ulcer formation. Naunton Morgan (7) has pointed out the difficulties in distinguishing amoeboma from malignant disease in these areas. In some cases biopsy and microscopic examination is essential.

Infection with Schistosoma Mansoni may give rise to bleeding granulomatous masses in the rectum which may be mistaken clinically for cancer. In cases of doubt biopsy and microscopic examination will reveal the lateral spined ova in the rectal mucosa and sub-mucosa.

Lymphogranuloma. Inguinale may involve the rectum, especially in females, and give rise to rectal stricture. Malignant disease of the rectum frequently tends to encircle the bowel with the production of annular stricture which later becomes ulcerated. Usually, a malignant stricture with ulceration can be distinguished clinically by the raised indurated edges and crater like ulcer. In some cases biopsy or operation and microscopic examination may be necessary to determine the aetiology of the stricture.

In case J where alternating constipation and diarrhoea, haemorrhage, and anaemia, increased the suspicion of malignancy, the long ulcerated rectal stricture was proved on microscopic examination to be a non-specific inflammatory lesion. Finally, Anal Tuberculosis and non-specific peri-anal granulomata may rarely be confused with malignant disease. In some cases biopsy and microscopic examination are necessary.

Plate 4 is a microphotograph²¹ of a section of the rectal stricture from Case J.

The pathologists report is as follows:- "There is chronic pyogenic inflammation in granulation tissue which has replaced the mucosa and submucosa of the rectal wall. Chronic inflammation and fibrosis with a few lymphoid follicles are present in the hypertrophied muscularis. In the peri-rectal tissue there are some foci of lymphocytes and plasma cells."

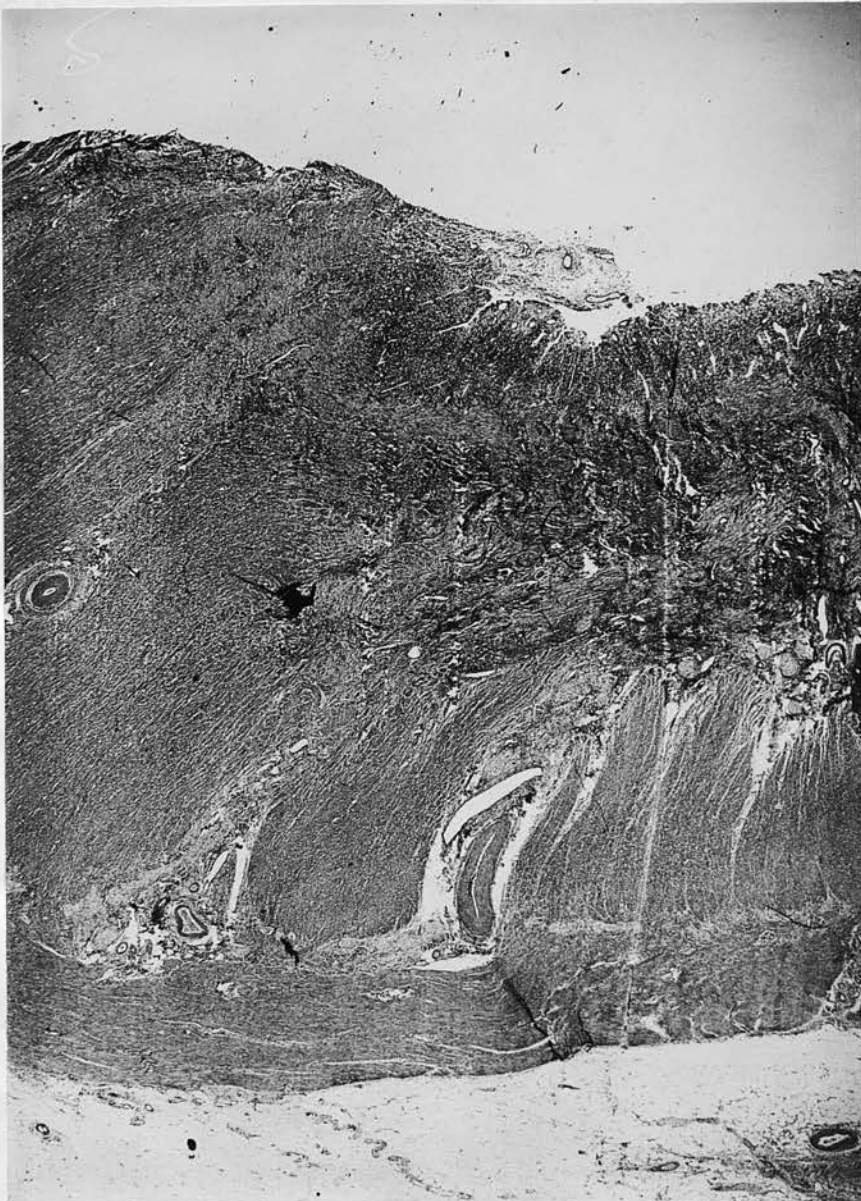


PLATE 4 (X 17)

BENIGN TUMOURS OF THE ALIMENTARY TRACT.

The most common polyps of the stomach and intestines are adenomatous, leiomyomatous, lipomatous, and neurofibromatous. Adenomatous polypi are much the most common in both sites.

In a review of gastric polypi Spriggs and others (9) found that in 70 cases, 51 were papillomatous or adenomatous, 11 were leiomyomatous, and 2 lipomatous. The most frequent sites were the body and the prepyloric region.

Helwig (10) in a report on 1460 consecutive autopsies found that adenoma was the most common polyp of the large intestine, the incidence being 9.5%. The most frequent site was the sigmoid colon 27.9%, the next most frequent site was the rectum 15.8%. Lipoma was the second most frequent polyp of the large intestine and its most common sites were the caecum and ascending colon. Leiomyomas of the large intestine were rare.

Adenomatous Polypi may be single or multiple, sessile or pedunculated. Microscopically, there is proliferation of the epithelium and connective tissue in varying degree. The connective tissue may be mostly fibrous, with few cells, or it may be oedematous. In some cases the muscularis mucosae extends up into the stalk, in others there may be isolated foci of smooth muscle. Stalks usually contain a moderate number of blood vessels.

The normal mucosa terminates at the base of the adenoma, or, if the polyp is of the pedunculated type, it is drawn out to cover the base and stalk. The rest of the tumour is covered by epithelium, disposed in an orderly arrangement of newly formed glands. Inflammation, haemorrhage, and malignant change may occur.

Adenomatous polypi are to be regarded as pre-cancerous lesions. The more numerous the polypi the more likely is cancer to follow. This is especially so in familial polyposis. Clinically, malignancy may be suspected in a polyp with a large, bulbous and irregular "head", especially if the firm irregular tissue extends down its stalk and onto the surrounding mucosa. Small sessile plaques of mucosal thickening, rounded and movable are usually benign.

Adenomas of the stomach may be symptomless. They may interfere with movement of the stomach, producing epigastric pain and discomfort, and they may be associated with changes in the gastric secretion. Spriggs and others (9) in a review of benign tumours of the stomach, found that free hydrochloric acid was commonly, but not constantly absent. In 44 cases there were 34 with no free hydrochloric acid and in 10 cases (6 of them Leiomyomas) free acid was present.

Clinically, symptoms arousing suspicion of malignant disease may be severe anaemia, achylia gastrica, the presence of a palpable tumour, and a filling defect on X-Ray examination with a barium meal. Usually adenomas of the stomach can be recognised on gastroscopy and by careful X-Ray examination with a barium meal. Using a trickle of barium in the gastric furrows or striae, the rugae or folds can be outlined and small adenomas defined. With larger tumours there is also a filling defect as more barium enters. This filling defect usually has a smooth outline, though it may be nodular. Peristalsis is unimpaired even with a large benign adenoma.

Malignancy may be suspected when tumours do not have the same smooth outline and peristalsis is interfered with at an early date or where there is a fixed or nearly fixed approximation of opposite sides of the stomach. When there are multiple adenomatous polypi the X-Ray picture shows irregular defects in the margin of the gastric shadow along the greater curvature, the indentations having ragged edges.

Adenomas of the large bowel may be palpable on abdominal examination, or per rectum. They may be visualised on sigmoidoscopy or by X-Ray examination with barium enema. The presence of intestinal bleeding and diarrhoea associated with hypochromic anaemia and loss of weight, in many cases increases the suspicion of malignant disease.

In all cases microscopic examination is essential to exclude malignant change.

Plate 5 is a microphotograph of a section from the polyp of colon in case H.

The pathologists report is as follows:-

"Segments of a papillary adenoma from the colon with nothing to suggest malignancy."



PLATE 5 (X 18)

Plate 6 is a microphotograph of a section from the rectal tumour in Case I.

The pathologists report is as follows:-

"A columnar celled trabecular and papillary adenoma from the rectum. There is no evidence of malignant change."

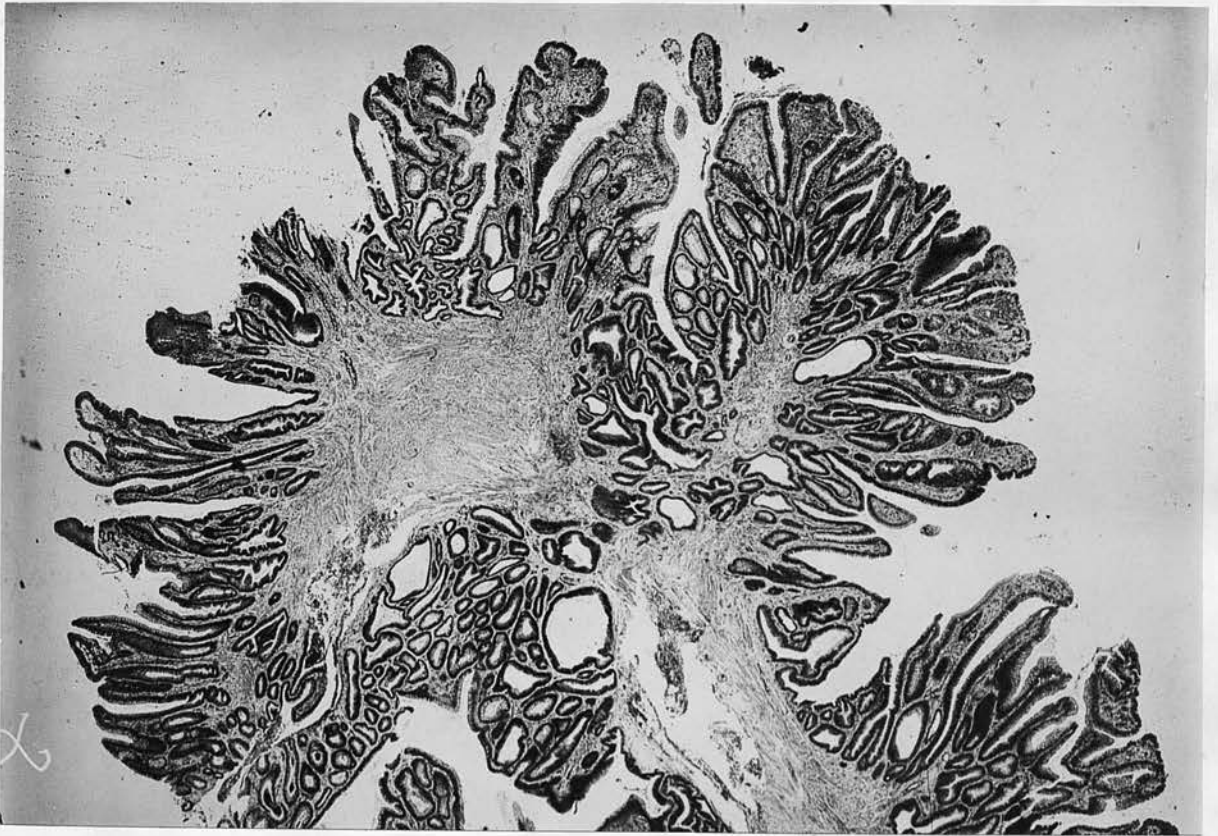


PLATE 6 (X 17)

Leiomyomas are the second most common benign tumours of the alimentary tract. Golden and Stout (11) in an investigation of 30 leiomyomas of the gut and retroperitoneal tissues causing symptoms, found the distribution as follows:-

Stomach.....	8	Meckel's	
		diverticulum....	1
Duodenum.....	2	Colon	2
Jejunum	1	Rectum.....	5
Ileum	3	Retroperitoneal	
		tissues.....	8

Of the gastric tumours 60% occurred in the pyloric region, 25% in the body and 15% in the cardia. The most frequent site was the posterior surface of the lesser curvature. 65% of their tumours were benign and 35% malignant, but they stress that any tumour large enough to cause clinical symptoms may become malignant.

In the gastro intestinal tract the tumours are firm, sometimes indurated, well defined, rounded or lobulated. They are usually sessile but may be pedunculated. Multiple growths are frequent. The cut surface presents a greyish pink, worled or watered silk appearance. Fibrosis, necrosis, haemorrhage, abscess formation or calcification may result from avascularity. The tumour starts in the muscle coats and may grow into or away from the lumen of the bowel, or in both directions. The overlying mucosa commonly ulcerates. Haemorrhage is frequent and

when combined with ulceration causes bleeding into the gastro-intestinal tract. Ulceration and haemorrhage were prominent features in Case C. Microscopically the smooth muscle cells with their myofibrils and an accompanying frame work of connective tissue, are arranged in bundles which tend to interlace. Lack of encapsulation helps to distinguish this tumour from a neurofibroma.

Clinically, in leiomyomas of the stomach malignant disease may be simulated by dyspepsia, intestinal bleeding, anaemia and the presence of a palpable tumour. Gross loss of weight is rare. In Case C, diagnosed as carcinoma of the stomach, there was epigastric pain, vomiting, melaena and secondary anaemia with a palpable epigastric tumour.

X-Ray examination is an aid to diagnosis, but the typical configuration is common to all benign tumours. In the endo-gastric type there is a central or marginal filling defect usually rounded and smooth, occasionally showing an ulcer crater. This picture was seen in Case C where there was a pyloric filling defect and ulcer crater, with disturbance of peristalsis and delay in emptying of the stomach. Regularity and smoothness of outline of this tumour, both clinically and on X-Ray examination, are points which should have raised the question of a benign neoplasm.

In Case C the correct diagnosis was suspected at operation and confirmed by microscopic examination. Plate 7 is a microphotograph of a section from the gastric tumour in Case C.

The pathologists report is as follows:-

"Leiomyoma of the stomach showing ulceration and haemorrhage. There is no evidence of malignant change."

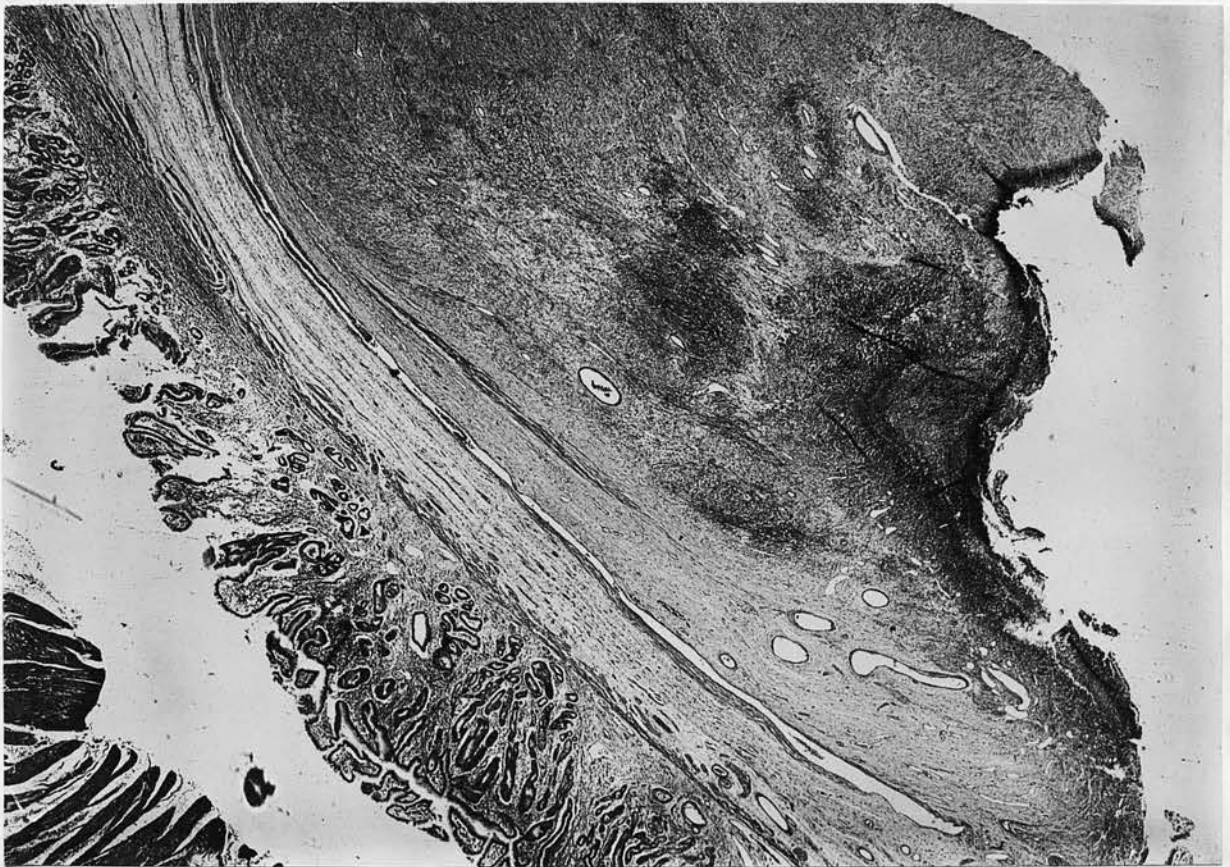


PLATE 7. (X 18)

CLINICAL SECTION.

CASE REPORTS.CASE A.

Mr. R.L., aged 59 years, a retired shopkeeper, first began to complain of epigastric pain 19 years ago. Pain was burning in character, situated in the middle of the epigastrium, and came on $\frac{1}{2}$ - 1 hour after food. It lasted up to one hour and was relieved by alkalis and vomiting, and eased by the diet which his Doctor prescribed. The severity of symptoms gradually increased and became more persistent. Six years previously after admission to hospital, a gastric ulcer was demonstrated radiologically, and his symptoms improved after six weeks course of medical treatment. During the last year, however, epigastric pain became more severe and continuous. The pain was gnawing in character and radiated through to the back. There was nausea with occasional vomiting. The appetite was poor and constipation troublesome. Alkalies and diet failed to relieve the pain. He became weak and lost over one stone in weight. Following a week of continuous, severe upper abdominal pain the patient was again admitted to hospital on 16th January 1946. Examination revealed a pale man with obvious loss of weight. The abdomen moved well with respiration. A tender, indefinite, fixed mass could be palpated in the epigastrium. There was guarding but no

rigidity. Haemoglobin was 60% with a red cell count of 3,500,000 per c.m.m. White cell count was 8,500 per c.m.m with 65% polymorphs. The blood urea was 24 m.g.%. Occult blood was present in the stools. A fractional test meal showed slight hypochlorhydria. Blood was present in the resting juice on microscopic examination.

X-Ray examination and barium meal showed a huge ulcer crater on the lesser curvature at the junction of the upper and middle third with a ring of spasm opposite.



PLATE 8

Plate 8 is a photograph of the X-Ray.

There was no delay in the emptying of the stomach.

Gastroscopy revealed an ulcer, 7.5 c.m.m. in diameter on the posterior wall of the lesser curvature. It had an angry raised margin and a deep crater with greyish, sloughing, irregular base.

Malignant change in the ulcer was suspected and operation advised. After blood transfusion, operation revealed that the whole supra-colic compartment was occupied by a mass of dense adhesions. A large gastric ulcer 7.5 c.m.m in diameter was present, firmly adherent to the pancreas. A high partial gastrectomy was performed with great difficulty and although the patients condition was fair at the end of the operation, it deteriorated rapidly and he died within the next twelve hours. Unfortunately Post Mortem examination was not agreed to by the relatives.

Microscopic examination of the ulcer showed a chronic gastric ulcer with necrotic surface and much fibrous replacement in the submucosa and muscle coats. There was no evidence of malignant change.

CASE B.

Mrs. L.P. aged 49 years, housewife, had complained of dyspepsia since the age of 28 years. During the last five years there had been burning central epigastric pain, an hour after food. The pain caused nausea and vomiting. It lasted up to an hour and was relieved by milk, alkalis, and vomiting. Symptom free periods had lasted up to a month. An X-Ray and barium meal had revealed a gastric ulcer three years ago. For the last six months pain had become more persistent and gnawing in character, radiating upwards and to the back. There had been increased nausea and vomiting, with anorexia and loss of one stone in weight.

Examination revealed a pale thin woman with dry, coated, tongue. There was central epigastric tenderness. Haemoglobin was 70% and red blood corpuscles 4,000,000 per c.m.m. Occult blood was present in the stools. Fractional test meal showed moderate hypochlorhydria, with starch and mucus present throughout. X-Ray and barium meal showed an ulcer niche on the lesser curvature three inches from the cardia.

On gastroscopy a deep ulcer 2 c.m.m. in diameter was seen on the lesser curvature three inches from the cardia. The ulcer had steep, smooth, almost overhanging edges. Mucus bubbles filled the ulcer and the base was not seen. There

was a ring of spasm across the posterior wall of the stomach leading to the ulcer.

After six weeks course of strict medical treatment, symptoms were slightly less severe but still present, particularly pain. A second barium meal showed the ulcer still present and larger.

A second gastroscopy confirmed that the ulcer had become larger and its diameter was now 3 c.m.m. It was deep with overhanging edges and there was a grey slough in the floor. There was oedema of the surrounding mucosa but no puckering or other evidence of scar formation.

Malignant change in the ulcer was suspected and operation advised. At operation the ulcer was found to be adherent to the pancreas. A partial gastrectomy was performed and the patient made a good recovery. Microscopic examination showed a chronic gastric ulcer with no evidence of malignant change. An associated lymphatic gland showed chronic inflammatory changes.

CASE C.

Mrs E.W. aged 68 years, housewife, complained of gradual onset of epigastric pain one year previously. Pain was aching in type and at times severe, radiating to the right side of the chest. Bouts of severe pain lasted a few minutes or up to a day, but she was never really free from pain. Food

made the pain worse. Vomiting relieved it, and alkalis partly relieved it. Flatulence had been troublesome. Appetite was fair and bowels were regular. At times she had noticed black tarry stools. There had been a slight loss of weight (6 lbs in 1 year).

Examination revealed a pale, sallow, woman. Haemoglobin was 63% and red blood corpuscles 3,260,000 per c.m.m. A smooth, slightly tender, resistant mass was palpable in the epigastrium. The lower edge could be felt just above the umbilicus, moving with respiration. Occult blood was present in the stools. Fractional test meal showed moderate hypochlorhydria with mucus and starch throughout.

X-Ray and barium meal showed a persistent filling defect at the pyloric end of the stomach, with a large ulcer crater, interference with peristalsis, and delay in emptying of the stomach.

Plate 9 is a photograph of the X-Ray clearly^{36.} showing the pyloric filling defect and ulcer crater.



PLATE 9

Unfortunately, for technical reasons gastroscopy was not performed. A diagnosis of carcinoma of the stomach was made.

At operation a smooth, rounded, mobile, endogastric tumour, the size of a billiard ball, was palpable through the stomach wall, and filled the pyloric area. The tumour appeared to be attached to the posterior wall of the stomach in this region. There were some soft glands in the subpyloric region and in the lesser omentum, but no evidence of secondary deposits in the liver. A sub-total

gastrectomy was performed and the patient made a good recovery. Examination of the resected stomach showed a smooth, firm, rounded, sessile, endogastric tumour, well defined, but with no capsule, filling the pyloric region. There was central ulceration through the gastric mucosa with degeneration and bleeding in the tumour, forming a deep ulcer cavity 1 c.m. in diameter. Microscopic examination revealed a leiomyoma with central ulceration and haemorrhage but no evidence of malignant change.

CASE D.

Mr. R. aged 72 years, a retired bank clerk, had complained for the past six months of epigastric discomfort bearing no definite relation to food, and associated with occasional attacks of nausea, but no vomiting. His appetite had remained fair, although he had lost half a stone in weight. Two weeks previously he complained of generalised abdominal pain which became recurrent and colicky, and at times gripping and severe. There was no vomiting but constipation had been troublesome and had increased in severity during the last six months.

Examination revealed a frail, thin, old man. Temperature was 99° Fahrenheit on admission, but normal thereafter. Pulse was 78 per minute, respirations 22 per minute. The tongue was dry

and coated. The abdomen was moderately distended and moved well with respiration, but with slightly diminished movements in the right iliac fossa. There was no rigidity or guarding. Active intestinal sounds were heard. In the right iliac fossa was a hard irregular mass 2 inches in diameter, undefined in its upper and inner quadrants, and slightly tender. It could be moved a little.

Blood examination showed 77% haemoglobin and 4,500,000 red blood corpuscles per c.m.m and a white cell count of 10,000 per c.m.m with 65% polymorphs. Blood urea was 40 m.g.%. There was no occult blood present in the stools.

X-Ray examination and barium enema showed a free flow through the colon. There was tenderness in the ileo-caecal region but no definite filling defect in the caecum could be demonstrated.

Abdominal pain subsided after 3 days conservative treatment. The mass in the right iliac fossa persisted. On clinical grounds, carcinoma of the caecum, producing sub-acute intestinal obstruction, was strongly suspected.

At operation the mass in the right iliac fossa was found to be inflammatory in nature. Dense adhesions had formed round a small chronic appendicular abscess and had involved the ileo-caecal junction. Omentum was attached to the mass. A gangrenous appendix was removed with difficulty, adhesions divided and drainage instituted. The patient made a good recovery.

CASE E.

Mr. S.R., aged 44 years, a cook, had complained of constipation with occasional attacks of watery diarrhoea since 1939. For the previous three months there had been accesses of colicky abdominal pain referred to the right iliac fossa, which had gradually increased in severity. His appetite had deteriorated and he had lost over a stone in weight and become pale and weak.

Examination revealed an emaciated man with obvious anaemia. The temperature was normal, pulse 88 per minute and respirations 22 per minute. The abdomen was distended and tympanitic with slight tenderness in the right iliac fossa, where a firm, rounded, slightly mobile, tumour about 5" x 5" was palpable.

Blood examination showed 48% haemoglobin and 3,400,000 red blood cells. The white blood count was 10,000 per c.m.m with 67% polymorphs. The stools were constipated and occult blood was present. No pathogens were demonstrated on culture.

On X-Ray examination a barium enema showed a free flow through the colon except in the region of the caecum and proximal segment of the ascending colon. This area appeared to be narrowed, spastic, and rather tender.

Malignant disease of the caecum was strongly suspected and operation agreed upon.

After a blood transfusion, operation revealed that the terminal segment of the ileum, the appendix, the caecum and proximal segment of the ascending colon were all thickened, oedematous, rigid, and very slightly inflamed. Changes were most marked in the caecum and colon. Lymphatic glands in the ileo-caecal angle were enlarged and easily palpable. A right hemicolectomy was performed and the patient made a slow but steady recovery.

Examination of the resected bowel showed thickening and rigidity of the walls which were slightly inflamed. There was narrowing of the lumen of the gut and ulceration of the mucosa, most marked in the caecum and proximal segment of the ascending colon.

Microscopic examination of the colon showed chronic inflammation and thickening of the wall by granulation tissue, the appearance being consistent with Crohn's disease. Two associated lymphatic glands showed chronic inflammatory changes.

CASE F.

Mr. A.S., aged 61 years, a secretary, had complained of constipation for many years, with anorexia, flatulence after food, and loss of over one stone in weight during the last two years. Three weeks previously there was sudden onset of diarrhoea, with six to eight semi-solid stools per day,

accompanied by a small amount of mucus but no blood. Diarrhoea was associated with a feeling of abdominal distension and a dull, heavy pain across the lower abdomen. At times he complained of a sharp colicky pain in the left iliac fossa. Defaecation and the passing of flatus relieved the pain and distension to some extent.

Examination revealed a large man with obvious loss of weight. His colour was good, tongue clean and moist, and temperature and pulse were normal. The abdomen was slightly distended, the liver was firm and smooth and enlarged two fingers breadth below the costal margin. There was guarding in the left iliac fossa, where a hard, slightly tender, irregular mass, 3" x 2" was palpable and felt to be continuous with the thickened, tender iliac colon immediately above it. Rectal examination was negative.

Blood examination showed 90% haemoglobin, and 5,000,000 red blood cells per c.m.m. The white cell count was 8,800 per c.m.m with 65% polymorphs. The stools were semi-solid, contained no blood, mucus, or pus, and no pathogens on culture.

Sigmoidoscopic examination up to the pelvi-rectal flexure revealed no abnormality except spasm above this point.

X-Ray examination with barium enema showed diverticula, most marked in the iliac and pelvic colon, with narrowing of the iliac colon and delay

in the flow of barium at this point.

A diagnosis of chronic diverticulitis was made on the clinical and X-Ray evidence, and conservative treatment instituted. Diarrhoea subsided, but the mass in the left iliac fossa persisted, lower abdominal pain continued, with abdominal distension and signs of sub-acute intestinal obstruction.

In view of this, and the possibility of associated malignant disease of the colon, operation was decided on. At operation diverticula were most marked in the iliac and pelvic colon. There was a dense, firm mass surrounding the lower iliac colon and causing narrowing of the bowel wall at this point.

The mass was resected, a colostomy performed, and the patient made a good recovery.

The resected mass was firm and hard, measured $2\frac{1}{2}$ " x 3" and surrounded and constricted the bowel wall. On section it appeared to consist of dense fibrous tissue and fat. The lumen of the bowel was constricted, but the mucosa showed no ulceration. Microscopic examination showed chronic pyogenic diverticulitis with no evidence of malignant disease.

Mrs A.B., aged 63 years, housewife, had complained of constipation for many years. She had taken increasing doses of purgatives. During the last six months constipation had become more severe and there had been lower abdominal discomfort with occasional attacks of pain. She had lost half a stone in weight during the last year. The day previous to admission she complained of sudden sharp colicky pain in the lower abdomen which increased in severity and became continuous.

Examination revealed a pale thin woman, with a temperature of 99.5° Fahrenheit and a pulse of 90 per minute. Haemoglobin was 70% and red blood cells numbered 4,000,000 per c.m.m. The white blood count was 9,500 with 70% polymorphs. An enema produced hard scybalous faeces with mucus but no blood.

There was no abdominal rigidity, although tenderness was present over the lower abdomen and most marked in the left iliac fossa. The descending colon was palpable and slightly tender. On digital examination of the rectum, a tender, slightly irregular, hard, fixed mass could be felt high up in the recto-vesical pouch.

The sigmoidoscope could not be passed higher than the pelvi-rectal junction. The lumen at

this point was narrowed and appeared to be fixed.

X-Ray examination with barium enema showed multiple, large diverticula most marked in the iliac and pelvic colon.

Plates 10 and 11 are photographs of the X-Rays.



PLATE 10

Plate 11 is a second photograph of the X-Ray in case G showing large diverticula of the pelvic colon.



PLATE 11.

After three weeks medical treatment, symptoms subsided, the low grade fever settled, and the mass in the recto-vesical pouch disappeared. Further sigmoidoscopic examination revealed no abnormality of the sigmoid colon. During a period of six months follow up in the out-patients department there has been no return of symptoms and no clinical evidence of malignancy.

CASE H.

Mrs E.M., aged 40 years, housewife, first noticed blood in her stools four years ago. The blood was bright red and usually mixed with faeces, but at times blood was passed per rectum independently of faeces. Attacks of bleeding per rectum occurred about every two months and there were occasional attacks of diarrhoea with blood and slime in the stools. For the past three years there had been low back pain and a feeling of fullness and distension after food. Her appetite had remained good, but she had lost half a stone in weight.

Examination revealed a pale rather thin woman. Nothing abnormal was found in the abdomen or on examination per rectum. Blood examination showed 65% haemoglobin and 3,500,000 red blood cells per c.m.m. White blood count was 6,000 per c.m.m with 60% polymorphs.

Sigmoidoscopy revealed an irregular polypoid dark red mass, with a nodular, irregular surface, attached to the anterior wall of the lower sigmoid colon. The polyp was not visualised with a barium enema which showed only spasticity of the sigmoid colon.

At operation, the tumour was found in the recto sigmoid junction - a large soft mobile polyp 2" x 2", attached to the anterior wall of the lower sigmoid colon by a thin pedicle.

The tumour was removed and the patient made a good recovery.

Microscopic examination showed a papillary adenoma with nothing to suggest malignant change.

CASE I

Mr. H.S. aged 70 years, a retired engineer, was sent to hospital by his doctor as a case of carcinoma of the rectum. For the previous seven months he had complained of increasingly severe watery diarrhoea, tenesmus, and occasionally blood and mucus in the stools. His appetite had remained fair, but he had lost one stone in weight during the last seven months.

Examination revealed a thin man with a blood pressure of 200/110 m.m of mercury and signs of arteriosclerosis. Haemoglobin was 80% and red blood cells numbered 4,550,000 per c.m.m. Stools were watery, 6 - 8 per day, with mucus but no blood. Abdominal examination was negative but on rectal examination a soft, friable, nodular, mass was palpable at $3\frac{1}{2}$ ".

Sigmoidoscopy showed a red, papillomatous mass covering the whole wall of the upper two inches of the rectum.

At operation a soft tumour was felt in the upper rectum. There was no evidence of secondary

deposits or fixation of the growth. A colostomy was performed. The patients condition deteriorated and he died four days later.

Microscopic examination showed a columnar celled trabecular and papillary adenoma with no evidence of malignant change.

CASE J.

Mrs E.S. aged 44 years, housewife, complained of increasing constipation for the past six years. There had been occasional attacks of diarrhoea, pain on defaecation, and at times a discharge from the anus and blood in the stools. There had been moderate loss of weight. During the past eighteen months there had been anorexia and flatulence.

On examination the patient was pale but well nourished. Haemoglobin was 48% with red blood corpuscle count of 3,250,000 per c.m.m. Abdominal examination revealed a palpable distended descending colon. On rectal examination a stricture was felt $1\frac{1}{2}$ " from the anal margin. It just admitted the tip of the index finger and great pain was caused on stretching.

Examination under an anaesthetic showed a tubular, friable stricture of the rectum with ulcerated surface, $3\frac{1}{2}$ " in length. A barium enema showed an enormously dilated colon above the stricture.

X-Ray examination of the chest, Wasserman reaction, Kahn test, Gonococcal compliment fixation test, and Frei's test were all negative.

After a blood transfusion a transverse colostomy was performed and five weeks later, after further blood transfusions, an abdomino-perineal resection of the rectum. The stricture was found to be adherent to the posterior vaginal wall. The patients condition deteriorated rapidly and she died in 12 hours.

Microscopic examination of the stricture showed chronic non-specific inflammatory changes with no evidence of malignant disease.

SUMMARY OF CLINICAL
CASES

CHRONIC GASTRIC ULCER - 50.
13 cases.

Age - 42 to 63 years.

Sex - 10 males to 3 females.

Occupation - All strata of society represented,
labourer, artisan, professional, housewife.

Family History. - Dyspepsia in 6 cases.

Previous History - Dyspepsia in all cases. Length varied
from 5 to 25 years. Average 9 years.

Clinical Picture:-

TABLE 1.

SYMPTOMS		NUMBER OF CASES
<u>Pain</u>		13
<u>Site</u>	Epigastric	13
	Radiating to back	6
<u>Type</u>	Burning hunger pains... ..	4
	Gnawing or boring..	9
<u>Time.</u>	$\frac{1}{2}$ to 2 hours after food	4
	Continuous, severe, nocturnal	9
<u>Relieved by</u>	Food	2
	Alkalis	8
	Vomiting... ..	6
<u>Epigastric Tenderness</u>		13
<u>Anorexia</u>		7
<u>Nausea and Vomiting.</u>		8
<u>Haematemesis</u>		3
<u>Flatulence</u>		6
<u>Loss of weight</u> (over 1 stone)... ..		6
<u>Weakness</u>		7
<u>Mass Palpable</u>		1
Subjective symptoms not relieved or only slightly relieved by 6 weeks of strict medical treatment in hospital... ..		10

Investigations:-

TABLE 2.

<u>Investigation</u>		<u>Number of Cases</u>
<u>X-Ray and Barium Meal</u>		
Ulcer demonstrated... ..		13
<u>Site</u>	Lesser curvature.	13
	Upper two thirds.	12
	Lower one third..	1
<u>Size</u>	Less than 2.5 c.m.m.diameter.	8
	More than 2.5 c.m.m.diameter.	5
Delay in evacuation of stomach... ..		3
<u>Gastroscopy</u>		
Confirmed X-Ray findings.		13
Showed enlargement of ulcer or failure to heal after 6 weeks hospital medical treatment		13
Showed associated chronic gastritis.. ...		5
Malignant change suspected... ..		4
<u>Fractional Test Meal</u>		
Hypochlorhydria..		5
Hyperchlorhydria.		8
<u>Occult blood in Stools</u>		8
<u>Blood Examination</u>		
Hypochromic anaemia..		13



Symptoms and signs simulating malignant disease:-

TABLE 3

<u>Symptoms and Signs</u>	<u>Number of Cases</u>
<u>Persistent gnawing pain radiating to the back...</u>	6
<u>Anorexia</u>	6
<u>Loss of Weight</u> (over 1 stone)	6
<u>Weakness</u>	7
<u>Hypochromic Anaemia.</u>	13
<u>Epigastric Mass</u> palpable	1
<u>Hypochlorhydria.</u>	5
<u>Gastrosopic Signs</u>	4

Diagnosis

In all thirteen cases of chronic gastric ulcer the diagnosis was made on the history, the physical examination, the gastrosopic signs, and X-Ray evidence of an ulcer crater after a barium meal.

Malignant change was suspected in all cases on clinical grounds, or the results of investigations, or both. Clinically, suspicion of malignancy arose in those cases in which subjective symptoms were not relieved, or were only very slightly relieved, by a six weeks course of strict medical treatment in hospital. A change from periodic epigastric pain to continuous gnawing pain radiating to the back, or failure of pain to be relieved by strict diet or alkalis was considered significant.

Anorexia, loss of weight⁵³ out of proportion to the diminished intake of food, weakness, hypochromic anaemia, and in one case a palpable mass in the epigastrium, were other symptoms and signs which aroused suspicion of malignant change.

Fractional test meals showed moderate hypochlorhydria in 5 cases and hyperchlorhydria in 8 cases. Although a test meal gives no constant result in chronic gastric ulcer, hyperchlorhydria is more common than in normal individuals. Held and Busch (5), consider that a tendency to hypoacidity is a significant feature in early ulcer cancer. They also stress that early signs of disturbance of gastric motility in malignant disease of the stomach are reflected in the fasting juice before they are evident on X-Ray examination. Thus, food eaten the night previously will be found in the fasting juice. This is of particular value in prepyloric ulcers with malignant change where disturbance of gastric motility is difficult to demonstrate by X-Ray examination. In the present series of cases three showed delay in evacuation, probably due to reflex achalasia of the pyloric sphincter. In no case did irregular peristalsis suggest malignant infiltration.

Gastrosocopy and X-Ray examination with barium meal demonstrated increase in the size of the ulcers, or their failure to heal. Rapid increase in size, inspite of strict medical treatment,

increased the suspicion of malignant change.

The size of the ulcers was of little value as a criterion of their malignancy. In 5 of the present series of 13 cases, the diameter of the ulcer was greater than 2.5 c.m.m., and in case A the diameter was 7.5 c.m.m. Yet in every case microscopic examination showed a simple chronic ulcer.

Although the interpretation of gastroscopic observations may be extremely difficult, nevertheless, in four cases in the present series early malignant change was suspected gastroscopically because of rapid increase in the size of the ulcer inspite of strict medical treatment, heaping up and rounding of the ulcer margin, and absence of signs of puckering and fibrosis.

Operative treatment was advised in all cases because of suspected malignant change, and failure to respond to medical treatment. In every case a partial gastrectomy was performed and microscopic examination showed chronic gastric ulcer with no evidence of malignant change. Following operation nine patients made a good recovery, and four died.

Leiomyoma of The Stomach.

In case C, a diagnosis of carcinoma of the stomach was made on the clinical features and the result of X-Ray examination with a barium meal. The persistent epigastric pain made worse by food, and relieved by vomiting, the presence of a

palpable tumour in the epigastrium, and the X-Ray evidence of a pyloric filling defect and ulcer crater, were all very suspicious of malignant disease.

Other features of the case such as occult blood in the stools, marked secondary hypochromic anaemia, and hypochlorhydria, increased the suspicion of malignant disease. On the other hand, smoothness and regularity of outline of the tumour, both clinically and on X-Ray examination, was a point in favour of a benign lesion.

The site of the tumour was the most common site for gastric leiomyomas. Golden and Stout (11) found that 60% of smooth muscle tumours of the stomach occur in the pyloric region, most frequently on the posterior surface of the lesser curvature, endo and exogastric tumours being of equal incidence.

While it is true that occult blood is frequently found in the stools of cases with carcinoma of the stomach, and that haematemesis may occur, it should be remembered that in the endogastric type of leiomyoma, ulceration almost always occurs with bleeding into the gastrointestinal tract. Haematemesis and melaena are frequently severe, producing marked secondary hypochromic anaemia.

Finally, cachexia and loss of weight in this case were slight (6 lbs in 1 year) and not of the order one would associate with a large malignant neoplasm. The benign nature of the tumour was suspected at operation, and microscopic examination confirmed the presence of a leiomyoma showing ulceration and haemorrhage but no evidence of malignant change.

Chronic Appendicitis:-

In Case D, a man aged 72 years, the prominent clinical features were the presence of a mass in the right iliac fossa associated with sub-acute intestinal obstruction.

There were few inflammatory signs, the temperature being 99° Fahrenheit on admission, but normal thereafter. Pulse and respiration rate was normal and the white blood count was 10,000 per c.m.m. with 65% polymorphs. Clinically, the mass had the hardness associated with malignant disease and was only very slightly tender. There was no abdominal rigidity or guarding.

In cases of doubt, the diagnosis of chronic disease of the appendix may be aided by X-Ray examination and barium meal, with visualisation of the appendix and definition of the maximal point of tenderness. Failure to visualise the

appendix in cases where there are symptoms and signs in the ileo-caecal region, is also in favour of a diagnosis of appendicitis. In the present case a barium meal was not given as there were signs of sub-acute intestinal obstruction, and barium enema failed to demonstrate the nature of the lesion.

Malignant disease was suspected clinically because of the persistence and hardness of the tumour, and the absence of inflammatory signs. Operation revealed the inflammatory nature of the lesion.

Crohn's Disease.

In case E, the prominent clinical features were again, the presence of a tumour in the right iliac fossa associated with sub-acute intestinal obstruction. The absence of inflammatory signs, and the presence of alternating constipation and diarrhoea with occult blood in the stools, emaciation, and severe hypochromic anaemia, were all features which suggested the presence of malignant disease. On the other hand, the chronicity of the illness was against a diagnosis of carcinoma of the caecum.

In classical cases of Crohn's disease where the distal segment of the ileum is affected, X-Ray examination and barium enema may be

particularly helpful. The barium is seen to leak through the incontinent ileo-caecal valve and outline the ileum, which shows no segmentation or peristalsis, is rigid, and may present strictures. In the present case, however, where the disease had chiefly affected the caecum and proximal part of the ascending colon, barium enema did not provide convincing evidence of the nature of the lesion. In this case malignant disease was strongly suspected on clinical grounds, the correct diagnosis was made at operation and confirmed by microscopic examination.

Diverticulitis 8 cases.

Age incidence:- 61 to 73 years.

Sex:- 4 males to 4 females.

Occupation:- Not significant.

Family History:- Nothing of note.

Previous History:- Constipation in 7 cases.

Excessive use of purgatives in 5 cases

Diverticulitis.Clinical Picture:-

TABLE 4.

<u>Symptoms and signs.</u>	<u>Number of Cases.</u>
<u>Lower Abdominal Pain</u>	8
<u>Abdominal Distension and Flatulence.</u> ...	6
<u>Constipation</u>	8
<u>Diarrhoea</u>	2
<u>Anorexia</u>	4
<u>Loss of Weight</u> (over 1 stone)... ..	3
<u>Hypochromic Anaemia.</u>	4
<u>Palpable Mass</u> (a) in left iliac fossa..	4
(b) per rectum	1
<u>Sub-acute Intestinal Obstruction</u>	1

Investigations:-

TABLE 5

<u>Investigation.</u>	<u>Number of Cases.</u>
<u>X-Ray and Barium Enema</u> showed diverticula in... ..	8
<u>Sigmoidoscopy</u> was not conclusive in any case.. ...	0
<u>Blood Count</u> showed hypochromic anaemia..	4
<u>Stools</u> Blood present in.	2
Mucus present in.	3

Diverticulitis.Symptoms and signs simulating malignant disease.

TABLE 6.

<u>Symptoms and signs</u>	<u>Number of Cases</u>
Lower abdominal discomfort and colicky pain with increasing constipation... ..	8
Alternating constipation and diarrhoea... ..	2
Blood and Mucus in the Stools... ..	2
Palpable Mass in left iliac fossa... ..	4
per rectum... ..	1
Loss of Weight.	3
Hypochromic Anaemia	4

Diagnosis.

In all cases of chronic diverticulitis the presenting symptom was lower abdominal pain and discomfort, usually associated with increasing constipation. These symptoms occurring in patients in the age group 60 - 70 years at once raised the suspicion of diverticulitis or malignant disease of the colon. When in addition, examination revealed a palpable tumour in the left iliac fossa or per rectum, when there was alternating constipation and diarrhoea, and in some cases wasting, blood in the stools, and

61.
hypochromic anaemia, suspicion of malignant disease increased.

Clinically, chronic diverticulitis can usually be distinguished from malignant disease of the colon by the greater tenderness of the tumour and associated guarding of abdominal muscles, by the general signs of inflammation, the response to medical treatment, and variation in the size of the tumour. Nevertheless a tumour due to malignant disease, with impacted faeces above it, is often tender and may be associated with inflammatory signs and even localised abscess formation. In such a case improvement of symptoms and disappearance of the tumour may occur after enemata and conservative treatment.

In all cases in the present series X-Ray examination and barium enema showed the presence of diverticula. Although there is no evidence that diverticulitis is a pre-cancerous condition or that the incidence of cancer is greater in diverticulitis than in simple diverticulosis, nevertheless, X-Ray evidence of diverticula will not exclude the presence of associated malignant disease. When X-Ray examination with barium enema demonstrates narrowing of the bowel wall with delay in the passage of barium, and when there is clinical evidence of sub-acute intestinal obstruction together with a persistent mass in the left iliac fossa, malignant disease may be simulated very closely. This was so in Case F,

where even at operation the nature of the mass remained uncertain. Microscopic examination revealed the inflammatory nature of the lesion.

In those cases where symptoms and signs subsided after conservative treatment, the benign nature of the lesions was indicated by the symptom free after history and by follow up in the out-patient department.

Benign Tumours of Colon and Rectum. 7 cases.

Age Incidence. 32 to 70 years.

Sex. 5 males. 2 females.

Occupation. Not significant.

Family History. Multiple polpi of the colon in one case.

Previous History. Bleeding per rectum in 6 cases varied from 6 months to 13 years.

Benign Tumours of Colon and Rectum.Clinical Picture:-

TABLE 7

<u>Symptoms and Signs</u>	<u>Number of Cases.</u>
Passage of Blood per Rectum... ..	6
Diarrhoea.	4
Tenesmus..	2
Hypochromic Anaemia... ..	6
Loss of Weight (over 1 stone).	6
Palpable tumour per rectum	5
Visualised on Sigmoidoscopy... ..	6
Visualised with barium enema..	1

Symptoms and Signs Simulating Malignant Disease:-

TABLE 8

<u>Symptoms and signs</u>	<u>Number of Cases</u>
Tumour present	7
Anaemia... ..	6
Loss of Weight	6

Diagnosis.

In all cases diagnosis was made on the history and the presence of a tumour. The tumours were either palpable per rectum, or visualised on sigmoidoscopy, or after X-Ray examination and barium enema.

The prominent clinical features were the passage of blood per rectum and diarrhoea, associated in most cases with loss of weight and anaemia.

X-Ray examination with a barium enema will usually give a characteristic picture of a polyp of the colon which cannot be visualised on sigmoidoscopy. Rounded semi-translucent areas are seen in the shadow of the colon. They may be best demonstrated by inflation of the colon with air after the greater part of the opaque enema has been evacuated.

Although all adenomatous polyps, and especially multiple polypi, must be regarded as pre-cancerous lesions, nevertheless malignant change may be suspected clinically. Apart from such general symptoms as cachexia and anaemia, which occur in cases with simple adenomata, malignant change may be suspected in a polyp with a large bulbous and irregular "head", especially if this firm tissue extends down the pedicle and onto the surrounding mucosa. Thus, in case H, malignant change was suspected when the polyp was visualised on sigmoidoscopy. In every case however, the final criteria of malignancy was the microscopic appearance of the tumours.

Both polyps of the colon were pedunculated adenomas, and in one case multiple polyps were

present. In the rectum, four tumours were adenomas and one a papilloma. Two rectal tumours, including the papilloma, were sessile, and three were pedunculated. In two cases of the pedunculated type multiple tumours were present.

Treatment was excision in all cases.

STATISTICAL SECTION.

THE INCIDENCE OF NON-MALIGNANT LESIONS OF THE
ALIMENTARY TRACT.

(a) The incidence of non-malignant lesions of the Alimentary Tract in a years inpatient admissions to a general hospital of 200 beds.

In a total of 5,000 patients admitted to hospital during the year 1945, (excluding patients with lesions of the mouth and pharynx) there were 483 cases with non-malignant lesions of the alimentary tract, an incidence of 9.6%.

Types of Lesion:-

By far the most common lesions were appendicitis, duodenal ulcer, and gastric ulcer. Together they accounted for 79.8% of all cases with non-malignant lesions. Their incidence was as follows:-

TABLE 9

Type of Case	Number	%
<u>Appendicitis.</u> Acute	109	22.6%
Sub-acute or		
Chronic.....	73	15.3%
<u>Total</u>	182	37.9%
<u>Duodenal Ulcer</u>	127	26.4%
<u>Gastric Ulcer</u>	75	15.5%
<u>TOTAL</u>	384	79.8%

The remaining 20.2% of non-malignant lesions of the alimentary tract was composed as follows:-

TABLE 10

Disease	Number of Cases	%
Gastritis	14	2.9%
Dyspepsia *	13	2.7%
Constipation	13	2.7%
Ulcerative Colitis	11	2.3%
Intestinal Polyps	10	2%
Diverticulitis	7	1.4%
Rectal Stricture.....	4	0.9%
Cardiospasm	1	0.2%
Sprue	1	0.2%
Megacolon	1	0.2%
<u>Diseases of Children.</u>		
Coeliac Disease	1	0.2%
Intussusception	4	0.9%
Pyloric stenosis	7	1.4%
Megacolon	2	0.4%
Feeding errors	8	1.6%
<hr/>		
TOTAL	97	20.2%

*No organic cause found on investigation.

Functional element large.

(b) The incidence of non-malignant lesions of the Alimentary Tract of 1,000 consecutive patients admitted to hospital with dyspepsia of any description:-

In 1,000 consecutive patients admitted to hospital with dyspepsia, during the period September 1943 to January 1946, it was found that there were 588 cases with non-malignant lesions of the alimentary tract, an incidence of 58.8%.

Of the 1,000 consecutive cases of dyspepsia admitted to hospital, the incidence of non-malignant lesions, malignant lesions, and lesions other than in the gastro-intestinal tract was as follows:-

TABLE 11

Type of Case	Number of Cases	%
Non-malignant lesions of The Alimentary Tract	588	58.8%
Malignant lesions of the Alimentary Tract	232	23.2%
Lesions other than in the Alimentary Tract		
Non-malignant.....169)		16.9%)
Malignant..... 11).....180		1.1%)18%

Of the non-malignant lesions of the alimentary tract in cases of dyspepsia, by far the most common were, Duodenal ulcer 164 cases (27.8%), Gastric ulcer 122 cases (20.7%), and sub-acute or chronic Appendicitis 129 cases (20.5%). (Cases of obvious acute appendicitis were not included in this survey, but only those cases of sub-acute or chronic appendicitis presenting as dyspepsia).

Of the malignant lesions of the alimentary tract the most common were, Carcinoma of the stomach 84 cases (34%), Carcinoma of the rectum 77 cases (31%), Carcinoma of the colon 48 cases (19%), Carcinoma of the oesophagus 18 cases (7.4%), and Carcinoma of the caecum 5 cases (2%).

Of the remaining cases presenting as dyspepsia with lesions other than in the gastro-intestinal tract, the most common non-malignant cases were Cholecystitis and Gall Stones, 122 cases (72.1%), and the most common malignant cases were carcinoma of the Pancreas, 8 cases (3.2%).

From this survey it would appear that:-

The incidence of non-malignant lesions of the alimentary tract in all patients admitted to a general hospital of 200 beds is 9.6%.

Non-malignant lesions of the alimentary tract

account for 58.8% of all cases of dyspepsia encountered in hospital practice.

The incidence of non-malignant lesions of the alimentary tract, in the population as a whole, is at least 9.6% and probably considerably higher.

S U M M A R Y

AND

C O N C L U S I O N S .

Summary.

Benign lesions of the alimentary tract which may simulate malignant disease, occur most frequently in the stomach, the ileo-caecal region, the colon, and the rectum.

In the stomach, the assessment of early malignant change in chronic gastric ulcer on clinical, radiological, or gastroscopic grounds is extremely difficult. Although the vast majority of chronic gastric ulcers remain simple lesions throughout their course, nevertheless, from the point of view of treatment and prognosis early malignant change must be suspected on clinical grounds, and the results of investigations. The presence of malignant change in gastric ulcers is almost always in doubt at operation, and the final criteria of malignancy must be microscopic examination. Even here diverse views on the criteria of malignancy are held by leading authorities.

Benign neoplasms of the stomach, although of rare occurrence, may closely simulate malignant disease. Nevertheless, they may be distinguished by careful assessment of the clinical features and the results of investigations. Microscopic examination is necessary to exclude early malignant change in benign tumours.

In the ileo-caecal region, various chronic inflammatory and granulomatous lesions may be confused with malignant disease. Careful clinical and radiological examination, together with full consideration of the clinical history, will avoid mistakes in most cases. In other cases the benign nature of the lesion will be revealed at operation. However, in lesions such as amoeboma, hypertrophic tuberculosis of the caecum, some cases of Crohn's disease, and in benign tumours, microscopic examination is often essential to exclude malignant disease.

In cases of diverticulitis, confusion with malignant disease of the colon, is most likely to occur where there is tumour formation in the left iliac fossa. Even at operation the nature of the tumour may be in doubt, microscopic examination revealing the inflammatory nature of the lesion. If palliative measures are taken, the response to conservative treatment and the after history will indicate the non-malignant character of the lesion.

benign lesions of the rectum such as amoeboma, benign neoplasms, schistosomiasis, lymphogranuloma inguinale, anal tuberculosis, and non-specific peri-anal granulomata may all at times be confused clinically with malignant disease. Correct diagnosis will depend in some cases on biopsy and microscopic examination of the lesion.

Clinically, in the cases studied in detail in this survey, the common symptoms of benign lesions of the stomach which aroused suspicion of malignant disease, were, persistent gnawing epigastric pain, anorexia, loss of weight, hypochromic anaemia, and in two cases a palpable tumour in the epigastrium.

In benign lesions in the ileo-caecal region, prominent clinical features simulating malignant disease were, the presence of a tumour in the right iliac fossa associated with sub-acute intestinal obstruction, anaemia, and loss of weight, together with the absence of inflammatory signs.

In benign lesions of the distal colon and rectum the presence of a tumour in the left iliac fossa or in the rectum, constipation and diarrhoea, with manifest or occult blood in the stools, anaemia, and loss of weight, were all common symptoms and signs arousing suspicion of malignancy.

From a statistical survey of patients admitted to hospital it was found that the sites in the alimentary tract (excluding mouth and pharynx) most prone to exhibit non-malignant disease are, the stomach, the duodenum and the appendix.

The sites in the alimentary tract in which

non-malignant lesions are most likely to be confused with malignant disease are the stomach, the ileo-caecal region, the colon and the rectum.

The incidence of non-malignant lesions of the alimentary tract in:-

- (a) a year's inpatient admissions to hospital was 9.6%.
- (b) 1,000 consecutive cases of dyspepsia admitted to hospital, was 58.8%.
- (c) the population as a whole was at least 9.6% and probably considerably higher.

Conclusions.

1. Non-malignant lesions of the alimentary tract occur in about 10% of all patients admitted to small general hospitals, and they account for some 60% of inpatient cases of dyspepsia in hospital practice.
2. Symptoms and signs associated with non-malignant lesions of the alimentary tract frequently arouse suspicion of malignant disease, and mistakes in diagnosis are often made, even with full hospital facilities for investigation.
3. The sites in the alimentary tract most prone to exhibit non-malignant disease are, the stomach, the duodenum, and the appendix.
4. The sites in the alimentary tract in which non-malignant lesions are most likely to be confused with malignant disease are, the stomach, the ileo-caecal region, the distal colon, and the rectum.
5. Non-malignant lesions occur sufficiently frequently to warrant very critical diagnostic criteria of malignancy. A searching clinical history, thorough physical examination, and very critical evaluation of the results of investigations, will result in fewer mistakes in diagnosis.

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